

Remarks

Claims 2-4, which were objected to as not referring back to a preceding claim, have been canceled, and new claims 18-20 are submitted claiming the same subject matter as original claims 2-4. Now new matter was added. Claims 6-20 now remain pending.

Previously, independent claim 6 was rejected as obvious from Kanematsu in view of Dines and Shapiro. Applicant's response explained that the rejection was improper because Shapiro was not prior art against the present application which had priority back to before the filing date of the Shapiro application. Now, the present Office Action uses Kanematsu and Dines in exactly the same word for word rejection of claim 6 as previously, and substitutes Seki for Shapiro.

As an initial matter, Applicant strongly objects to the finality of the most recent Office Action and requests entry of the present Response without having to pay for a Request for Continued Examination. The current Office Action provides boilerplate indicating that the current new grounds of rejection were necessitated by Applicant's amendment. That is not correct. As explained above, the original rejection based on Shapiro was improper because Shapiro was not prior art, and that is why the Examiner chose to provide the current rejection based on Seki. Should the Examiner refuse to enter the present response because of the after final status he has created, Applicant reserves the right to formally pursue correction of this improper examination procedure.

Dealing with the substance of the current rejection, claim 6 is directed to a radiotherapy apparatus that processes two-dimensional radiation imaging to produces tomography data (i.e., three-dimensional imaging data). The tomography data provides sectional views containing

pixels derived from voxels from the tomography data which are disposed transversely to the sectional view. A therapeutic source can be controlled according to this arrangement to produce therapeutic radiation. The current Office Action suggests that one of skill in the art would find it obvious to combine the teachings of Kanematsu, Dines and Seki so as to produce a system according to claim 6. Applicant respectfully disagrees.

As the first step in his analysis, the Examiner assumes that one of skill in the art would combine the teachings of Kanematsu and Dines. But Kanematsu and Dines address different problems, and the improvement that Dines offers is simply not relevant to the Kanematsu system. Dines describes producing intersecting two-dimensional planar views that make it easier to view an image dataset. Col. 18, lines 8-30. Kanematsu takes a three-dimensional tomographic data set from cone beam computed tomography (CBCT) and compares it with a previous or planning dataset by way of what he refers to as "image fusion." Col. 6, line 56-col. 7, line 3. A result is displayed denoting the degree of difference between the two; if this is within acceptable limits then the operator can permit treatment to commence. *Id.* But significantly, Kanematsu does not seek to display the whole 3D tomographic dataset to the operator in a manner that might be made easier by the 2D views of Dines. Rather Kanematsu just displays the numerical result and the volume information is lost in his image fusion process. So Dines addresses a problem (image dataset viewing) that is not present in Kanematsu, and offers an improvement (intersecting two-dimensional planar views) that is not relevant to the Kanematsu system. Thus, one of skill in the art using the Kanematsu system would not be motivated to seek out or implement the solution offered by Dines.

The foregoing is enough to overcome the combination of Kanematsu and Dines, but the Seki reference can also be addressed, at least somewhat. The present Office Action says that Seki teaches the use of voxels in a tomographic data set. However, claim 6 specifically requires that pixels are derived from a group of voxels which are disposed transversely to a given sectional view. The Office Action does not provide a citation to any specific passage from Seki or even any explanation as to how the general use of voxels by Seki is relevant to the specific arrangement using voxels as required by claim 6, so Applicant can only speculate hypothetically with regards to Seki. And in that hypothetical vein, Applicant notes Seki's discussion at column 26, lines 12-27 with regards to his Figures 40-43 which describes use of voxel data for treatment planning (col. 25, lines 37-42: "a radiotherapy planner") and more specifically the use of a conventional CT scanner in this setting. In that regard, Seki describes multi planar reconstruction (MPR), which is the ability to view a slice at an arbitrary angle through the original sliced CT data set. This MPR slice can be an arbitrary thickness, and Seki does refer to summing up the data in this thickness to form the slice. By way of context, Applicant understands that conventional CT as in Seki tends to have much poorer resolution along the patient's axis, which results in MPR images with non isotropic resolution. As an improvement, Seki is using the inherent isotropic resolution of the CBCT to produce the three orthogonal views with reduced noise, but retaining the advantage of the isotropic resolution, which is therefore the motivation behind Seki's use of voxels for MPR slices. But that same motivation simply is not applicable or relevant in either Kanematsu or Dines, and thus one of skill in the art would not be motivated to turn to Seki and use his MPR slicing technique in an entirely different context.

Therefore, for all of the foregoing reasons, claim 6 is allowable over the prior art. Claims 7-20 depend from claim 6 and are similarly allowable. Reconsideration of the claims and issuance of a Notice of Allowance is respectfully requested.

Conclusion

Applicant hereby requests a three month extension of time in accordance with the provisions of 37 C.F.R. § 1.136. Please charge deposit account 19-4972 for the amount of \$1,050.00 for the fee for the three month extension of time. Applicant believes that no further extension of time is required; however, this conditional petition is being made to provide for the possibility that the applicant has inadvertently overlooked the need for a further additional extension of time. If any additional fees are required for the timely consideration of the application, please charge deposit account number 19-4972.

Respectfully submitted,

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